

Relationship between Structural and Intermediary Determinants of Health and Preterm Delivery

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Abstract

Background: Preterm birth is a major health problem that leads to infant morbidity and mortality. The main goal of this study was to find the relationship between social determinants of health and preterm delivery.

Methods: A prospective longitudinal cohort study was carried out on 500 pregnant women in their 24th to 28th gestational weeks in 2012. The pregnant women filled out a self-report questionnaire on the structural determinant, perceived stress, and perceived social support. The participants were followed up until labor and the data about mother and the newborn were collected after labor. The data were analyzed by SPSS 21 and Lisrel 8.8 software programs using pathway analysis.

Results: The final path model fit well (CFI=0.96; RMSEA=0.060). Path analysis showed that among structural factors, income had a direct effect ($\beta=0.06$) and the factors of income ($\beta=0.00594$), number of children (family size) ($\beta=-0.024$), as well as mother's education ($\beta=-0.0084$) had the greatest overall effect on gestational age at birth respectively. Also, the results showed that among intermediate factors of social determinants of health, stress in the direct path ($\beta=-0.12$) and among the overall effects, the perceived stress ($\beta=-0.12$) and perceived social support ($\beta=0.0396$) affected the gestational age at birth.

Conclusion: The current study showed that some structural and intermediary determinants such as income and perceived stress had an effect on preterm labor.

Keywords: Intermediary determinants of health, Perceived social support, Perceived stress, Structural determinants of health.

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Introduction

Preterm birth (PTB) is a global health problem that leads to infant morbidity and mortality (1, 2). Preterm birth (PTB), the birth of an infant prior to 37 completed weeks of gestation, poses an economic burden to family and the state of residence.

The prevalence of preterm delivery in different countries is estimated to be 5 to 13% (3-5). In Iran,

the prevalence has been reported between 5.6-34.9% (6). Preterm birth is responsible for 75-90% of all neonatal deaths, prenatal deaths and is a major cause of short and long term neonatal damages (7).

prematurity has short and long-term complications which include respiratory distress syndrome, dysplasia, anemia, fatigue, kernicterus, intraven-

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tricular hemorrhage, bleeding into or around the abdominal, bacterial or fungal sepsis, retinopathy, necrotizing enterocolitis, learning and behavioral and cognitive problems (low IQ), mental retardation, blindness, hearing loss, and developmental problems (8-10).

Although technological advances have led to greater survival of preterm infants, morbidity still remains rather high, imposing greater emotional and financial burden on families and the health care system (11).

Studies have identified numerous physiological and psychological risk factors in preterm births including black race, ages below 17 and over 35, low education, poor socio-economic status, poor access to prenatal care, physical abuse, nutritional status, long working hours, psychological characteristics, infection, previous preterm birth, incorrect behaviors (smoking, alcohol and drug abuse), uterine abnormalities, violence and abuse, stress, depression, increased risk of unwanted pregnancies and reduced level of social and financial support, habitat and stressful jobs (1, 10, 12, 13).

All factors are identified as risk factors in societies with low Socioeconomic Status (SES) (14). Despite improvements in standards of life, health care, diagnostic and treatment technologies, causes of two thirds of preterm births are still unknown. Yet, risk factors cannot appropriately predict for whom preterm birth may occur (15).

Since higher preterm rates are observed in poorer societies, it seems that causes should be sought in biological and socio-psychological factors. Today, researchers believe that preterm labor is not merely a disease, but it is a syndrome that may have one or more causes (12). More recent views of scholars emphasize on the role of demographic and health factors.

Various models have been proposed to explain the mechanism of determinants' effects on healthy pregnancy outcomes. According to Townsend et al.'s model, different birth outcomes are due to the difference in power struggle between social classes. Given this concept, material inequalities such as income differences, people's working conditions, habitats, access to health care facilities and exposure to physical harm, all may affect birth outcomes (16).

These factors may directly or indirectly affect birth outcomes through maternal health behavior and lifestyle. The studies demonstrate that in poor socio-economic conditions, incorrect health behaviors, improper use of prenatal care, poor nutri-

tion, anemia and other maternal diseases, will lead to greater drug abuse and greater obstetric complications such as miscarriage, stillbirth and premature labor. Poor housing, low maternal education and low income are significantly associated with preterm labor (17-20).

Other models emphasize on the direct role of intermediary health determinants in pregnancy outcomes and believe that structural factors are not directly influential, but affect health outcomes through intermediary factors.

In the socio-psychological model, it is stated that social status affects an individual's feelings and this in turn affects her health. It is also believed that different birth outcomes among different socio-economic groups are created by relevant socio-psychological stressors (21). Various investigations on intermediary social determinants indicate that preterm labor is associated with stressful life events, anxiety, depression, stressful jobs and physical abuse (22, 23).

In spite of all the information in this area, health determinant communication routes are still unknown in incidence of adverse pregnancy outcomes. Thus, this study was conducted to determine the relationship between structural and intermediary health determinants and incidence of preterm birth using path analysis. The aim of this paper was to use a new statistical framework for analysis based on path analysis techniques for showing the relationship between structural and intermediary determinants of health and preterm delivery.

Methods

A prospective longitudinal cohort study was carried out among 500 pregnant women from July 2011 to February 2012. In the first sampling stage, city of Tehran was divided into 4 geographical classes; North, South, East, and West (stratified sampling) and then, one public hospital was chosen from each class and 500 pregnant (24-28 weeks) women from these hospitals were randomly selected. After explaining study objectives, if they met study inclusion criteria, informed consents were obtained from pregnant women and their spouses. Then, initial interviews were conducted and the birth date was determined by the first day of the last menstrual cycle as disclosed by the mother, if unknown, and then first trimester ultrasound was used. Questionnaires were completed during 24-28 weeks of pregnancy to assess structural and intermediate determinants. The sub-